WHAT IS CLAIMED IS:

1. A capacitor comprising:

a first electrode made of a metal;

a second electrode made of a conductor; and

a capacitive insulating film existing between the first and second electrodes,

wherein the first electrode has been doped with impurity atoms that suppress decrease in stiffness of the first electrode at a high temperature.

2. The capacitor of Claim 1, wherein the first electrode is made of a platinum noble metal.

3. The capacitor of Claim 1, wherein the impurity atoms are hydrogen atoms.

4. The capacitor of Claim 1, wherein the first electrode has a thickness of 100 nm or less at the thinnest part thereof.

5. The capacitor of Claim 1, wherein the capacitive insulating film is a dielectric film made of an oxide.

6. The capacitor of Claim 1, wherein the second electrode has been doped with impurity atoms that suppress decrease

in stiffness of the second electrode at a high temperature.

7. A capacitor comprising:

a first electrode made of a noble metal or a refractory metal;

a second electrode made of a conductor; and

a capacitive insulating film existing between the first and second electrodes,

wherein the first electrode contains hydrogen.

8. The capacitor of Claim 7, wherein the first electrode has a thickness of 100 nm or less at the thinnest part thereof.

9. The capacitor of Claim 8, wherein the capacitive insulating film is a dielectric film made of an oxide.

10. A method for fabricating a semiconductor device that includes, as a component thereof, an electrode made of a noble metal or a refractory metal, the method comprising the steps of:

a) forming the electrode; and

b) annealing the electrode in a reducing atmosphere.

11. The method of Claim 10, further comprising the step

A1 of forming, on the electrode, a dielectric film for a capacitor after the step b) has been performed.

12. The method of Claim 10, wherein the step b) is performed in an atmosphere that contains hydrogen and that has been created as the reducing atmosphere.

13. A method for fabricating a semiconductor device that includes an electrode as a component, the method comprising the steps of:

a) forming the electrode;

b) annealing the electrode in a reducing atmosphere; and

c) forming an insulating film made of an oxide on the electrode.

14. The method of Claim 13, wherein the step b) is performed in an atmosphere that contains hydrogen and that has been created as the reducing atmosphere, and

wherein the method further comprises the step of forming, on the insulating film, another electrode for a capacitor after the step c) has been performed.

15. The method of Claim 13, wherein the step b) is performed in an atmosphere that contains hydrogen and that has been created as the reducing atmosphere.

ADD A2